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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,362	11/14/2003	Eric Dickey	6333-67325	9159

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KLARQUIST SPARKMAN, LLP  
One World Trade Center  
Suite 1600  
121 S. W. Salmon Street  
Portland, OR 97204

EXAMINER
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KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

MAIL DATE	DELIVERY MODE
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06/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/713,362

Applicant(s)

DICKEY ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/14/03 &amp; 1/26/04</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-13 and 20 and cancellation of claims 14-19 in the reply filed on 4/9/2007 is acknowledged.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The recitation of a flow shield in this claim is not disclosed in the specification.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1 and 4-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Eres et al (US 5330610).**

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Eres et al disclose an ALE (atomic layer epitaxy apparatus) (abstract and Fig 1) where precursors are delivered in pulses where there may be one or more than one precursors (Col 8 lines 56-61). Eres et al further disclose an optical monitor to detect optical spectrum and a controller to control in closed loop deposited parameters of the deposited film (Col 2 lines 21-23, Col 3 lines 3-34, Col 4 lines 41-54 and Col 10 lines 26-46).

**6. Claims 1 and 4-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Bachmann et al (US 5552327).**

Bachmann et al disclose an ALE (atomic layer epitaxy apparatus) (abstract and Fig 1) where two precursors are delivered in pulses. Bachmann et al further disclose an optical monitor to detect optical spectrum and a controller to control in closed loop deposited parameters of the deposited film (Col 2 lines 21-23, Col 3 lines 3-38, Col 6 lines 14-26, Col 7 lines 39-52 and Col 10 lines 17-28).

***Claim Rejections - 35 USC § 103***

**7.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**8. Claims 2-3, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eres et al (US 5330610) in view of Muller et al (US 5724144) and further in view of Toshiaki Sango (JP 09209179) or Koji Eriguchi (US 5985032).**

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Eres et al disclose the holding of substrate in a conventional way. However it is known that windows used for optical monitoring get unneeded deposition to cause errors in monitoring.

Muller et al teach that by monitoring substrates from the rear does not need any monitoring window (abstract and Fig 4). Miller et al disclose this by using holes drilled in substrate holders covered by a window behind the substrate. Muller et al do not disclose the substrate back extensively open for monitoring.

Toshiaki Sango discloses monitoring a transparent substrate mounted on processing chamber with seal and allows monitoring of film deposited from inside to be monitored from outside (Abstract and Fig1-Fig 3).

Koji Eriguchi discloses a similar window (Fig 10a and 11).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to install substrate so that deposition may take place inside while monitoring could be done from outside so as to obviate the need of optical windows which become clouded due to unnecessary deposition.

**9. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eres et al (US 5330610) in view of Tsai (US 5858102).**

Eres et al do not disclose planetary rotation of substrate holder. Tsai teaches that planetary motion of substrate holder increases uniformity of deposition (Abstract).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have planetary rotation of the substrate holder for uniformity of deposition.

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**10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eres et al (US 5330610) in view of Byun et al (US 6620723).**

Eres et al disclose an ALE (atomic layer epitaxy apparatus) (abstract and Fig 1) where precursors are delivered in pulses where there may be one or more than one precursors (Col 8 lines 56-61). Eres et al further disclose an optical monitor to detect optical spectrum and a controller to control in closed loop deposited parameters of the deposited film (Col 2 lines 21-23, Col 3 lines 3-34, Col 4 lines 41-54 and Col 10 lines 26-46).

Eres et al does not explicitly disclose the controller to be a computer with a readable medium with instruction for deposition.

Byun et al disclose using a computer with a readable medium with instruction for ALE deposition (Col 3 lines 27-52).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have a computer with a readable medium with instruction for deposition for automation related advantages of through put, accuracy and repeatability.

**11. Claims 1, 4-10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eres et al (US 5164040) in view of Byun et al (US 6620723).**

Eres et al disclose an ALE (atomic layer epitaxy apparatus) (abstract and Fig 1) where two precursors are delivered in pulses (abstract and Fig 1). Eres et al further disclose an optical monitor to detect optical spectrum.

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Eres et al does not explicitly disclose the controller to be a computer with a readable medium with instruction for deposition in order to control in closed loop deposited parameters of the deposited film.

Byun et al disclose using a computer with a readable medium with instruction for ALE deposition (Col 3 lines 27-52) and a closed loop control of deposition.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have a computer with a readable medium with instruction for deposition for automation related advantages of through put, accuracy and repeatability.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar  
Primary Examiner AU 1763